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AUTHOR Reimer, Judy
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ABSTRACT

Work Keys provides a metric that translates skill requirements for individual jobs into levels of proficiency. It has been developed as a multifunctional program with the interactive components of Job Profiling, Instructional Support, Reporting, and Assessment. The assessment component contains applied mathematics, applied technology, teamwork, and observation aspects. The American College Testing (ACT) program furnishes supplies for the Work Keys program and provides computer scoring. The system is a generally well-developed and well-executed product. When used effectively it can assist companies with employee selection and aid students in the smooth transition from school to work. Work Keys assessments are not norm-referenced, but a norming sample was drawn using 14,584 individuals to evaluate internal consistency. Research has also supported the validity of Work Keys. The ACT adheres to high standards in Work Keys and provides extensive client services, but budget restraints might hinder organizations in fully implementing the Work Keys System. Some limitations to the use of Work Keys are identified, but it is concluded that it provides individuals with career planning information regarding existing skill levels and levels needed to perform the jobs they want. (Contains 12 references.) (SLD)

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JUDY REIMER

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Judy Reimer
Graduate Assistant
Department of Educational Psychology
Texas A & M University

A paper presented at the annual meeting of the
Southwest Educational Research Association
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Title: Work Keys™ System
System Components: Assessments, Job Profiling, Instructional Support, and Reporting.
Publisher: American College Testing (ACT)
Dates of Publication: The eight criterion-referenced skill assessments may be used in various combinations and their publication dates range from 1992 to 1995.
Time required to administer: Varies with each assessment; ranges from 35 to 80 minutes.
Cost: The following assessment prices include Standard Score Reports, shipping and handling, and one Administrator's Manual for every 25 examinees: Reading for Information, Locating Information, Applied Mathematics, and Applied Technology @ $4.00 per assessment; Teamwork and Observation @ $7.00 per assessment; and Writing and Listening @ $16.00 per set. Rapid scoring services and administration videotapes are offered at additional costs. The Instructional Support components (Targets for Instruction) are available for each assessment and vary from $12.00 to $40.00. Job Profiling services start at $4,000 for the first job, plus travel expenses for the job profiler(s); discounts are offered for contracts over $100,000 (ACT, 1994a).

Brief Description of Purpose and Nature of Test

Work Keys was developed in conjunction with a variety of consulting groups and provides a metric which translates skill requirements for individual jobs into levels of proficiency (McLarty and Palmer, 1994). It has been developed as a multifunctional program with four interactive components. The Job Profiling component uses Work Keys' SkillPro software to systematically analyze jobs. During this procedure the Work Keys analyst meets with subject matter experts, (i.e., job incumbents and their supervisors) who select the tasks most important to their job and identify the skills required for effective performance on that job (McLarty and Palmer, 1994). The Instructional Support component provides a series of guides to supplement existing curricula and training. The Reporting component includes Chart Essay Reports, Individual Reports, Roster Reports, and Vocational Information

Reports (ACT, 1994a). The Assessment component enables individuals to demonstrate their competency in Work Keys skill areas by responding to situations, reading passages, mathematical problems, and messages similar to those found in a wide variety of jobs. Each assessment consists of four or five levels and each successive level is more complex than the previous level (McLarty and Palmer, 1994). Each test has its own score scale with different starting levels (ACT, 1994b).

Applied Mathematics measures mathematical reasoning skills applied to work-related problems. Reading for Information measures skill in reading and understanding memos, bulletins, notices, letters, policy manuals, and government regulations. Locating Information measures skill in using information taken from workplace graphics such as diagrams, blueprints, floor plans, charts, and instrument gauges. Applied Technology measures skill in reasoning and applying basic technological principles of mechanics, electricity, fluid dynamics and thermodynamics. The Teamwork and Observation assessment prompts are videotaped scenarios. Teamwork measures the skill of choosing behaviors and actions which support and implement team goals. Observation measures skill in paying attention to instruction and noticing details in processes, safety procedures, and quality control standards. Listening and Writing are open response assessments administered via one audiotape containing the directions for transcribing messages from customers, co-workers, or suppliers. Each written response is scored twice, for details and accuracy and then for writing mechanics and style (ACT, 1995).

Practical Evaluation

The ACT furnishes postage-paid supplies for returning the materials for computer scoring and it is not uncommon for it to take several weeks to receive results (Deis, 1995). The individual response booklet indicates the location for bubbling-in the multiple choice answers and writing the messages from the Listening/Writing assessments. The returned reports provide general descriptive information regarding how various groups scored and the multi-page individual report provides the skill level for each assessment, descriptions of the tasks associated with the skill level, some strategies for improving the skill level, and a summary sheet suitable for attaching to a resume (ACT, 1994b). The reader should understand that the resulting level score (i.e. levels 3 to 7) are not related to any other index of reading difficulty like grade level (Deis, 1995). The information is designed to be used for course planning, career guidance, individual goal setting, and can be authorized for release to prospective employers. Work Keys can be given in large groups and the administrator must adhere to the procedures as specified in the manual (ACT, 1994b). Because the Work Keys components are interactive, they can be used repeatedly to monitor an individual's skill levels and to document improvement in education and training programs (Scruggs, 1994). The Work Keys System is a generally well developed and well executed product and when used correctly can be an effective tool to assist companies with employee selection and development and to aid students in the smooth transition from school to work (Deis, 1995).

Technical Evaluation

Since Work Keys assessments are not norm-referenced; defining and selecting a sample of examinees to describe the technical qualities and developing a scale that would convey meaning in a clear manner to anyone concerned about the strengths and weaknesses of individuals, programs, schools, training programs was a challenging task. The norming sample's average age was 18 and was drawn from examinees from three Work Keys Charter States. Seventy-two percent indicated their ethnic origin as Caucasian and 53 percent of the 14,584 individuals were in 12th grade. The response-centered Guttman-scaling procedure was used to simultaneously order examinees and items in the order of highest-to-lowest examinee score and of easiest-to-most difficult item. Based on pretest data, the Guttman scaling data indicated coefficients of reproducibility ranging from .88 to .90 and coefficients of scalability ranging from .56 to .61 (Vansickle, 1992). The selected-response assessments indicated internal consistencies (i.e., coefficient alphas) ranging from .75 to .85. The Work Keys assessments contain items at the lower levels that most individuals can answer correctly and items at the upper levels that only a few individuals can answer correctly. This configuration has the effect of lowering the coefficient alpha computed for the selected-response assessments (ACT, 1994b). Coefficient alpha was computed for the ratings received for each prompt of the Listening and Writing assessments and internal consistencies ranged from .85 to .89. These calculations were based upon a total of 12 values; each prompt is scored twice and there are 6 prompts per assessment.

Items written and selected for the assessments are screened against EEOC guidelines to help ensure job-relatedness and fairness (McLarty and Palmer, 1994). The tests were developed using a content validity strategy; the tests measure skills shown to be contained in the jobs. This content validation is directly connected to the detailed job analysis/job profiling procedures which are based upon the same metric as the assessments. Criterion (actual job performance) validation studies have not been reported. Alternate-forms reliability studies and validity studies in business settings are in progress. As more jobs are profiled and examinees are hired, opportunities for establishing criterion validity of Work Keys will become available and should provide an index of how effectively the Work Keys tests predict job performance.

The ACT has initiated several changes as of January, 1996, to improve the reliability of each assessment (J. R. McLarty, personal communication, January 10, 1996). The Work Keys' previous method counted correct responses for each subset of items, where a subset of items was at a particular level on the scale. On the selected-response tests, the upgraded scoring will allow credit for a level based upon the cumulative correct responses of the total test items. For example, a score of 14 for a specific assessment might indicate 82% mastery of level 3, 62% mastery of level 4 and 42% mastery of level 5. The score conversion, based upon empirical data, will be set at the point or cut score, which corresponds to 80% mastery. The upgraded scoring for Listening and Writing will back off of the current exact score approach and give credit for a level with a score that is within one standard

error of the criterion score. The changes retain the content definitions which link to job profiles, the large item pool at each level, the sequential nature of item difficulty and maintain the criterion referenced score. It appears that the upgraded scoring will improve internal consistency reliability by about .10 for each assessment, allow for equating forms, and provide the underlying base for developing adaptive computer versions. The new materials and scoring supports became available January, 1996.

Reviewer Comments

As Work Keys is relatively new, comments from the field have been included along with comments from the one published test review by C. Scruggs (1994). Information gathered about workplace skills from a Work Keys assessment meets many of the federal and state evaluation needs mandated by work-based learning initiatives, contract-training requirements, and skill-certification alternatives. There is continued need for empirical studies regarding validity and alternate-form and test-retest reliability. Although Work Keys has the potential to provide a system for teaching and assessing employability skills, the job profiling services cannot possibly cover all the jobs that industry might create (Scruggs, 1994).

In one validation study, analysis of the Federal Express Customer Service Agent job established applicant requirements at level 5 for Reading for Information and Listening and at level 3 for Writing; although these could not be considered absolute qualifiers (Hater, 1992). Participants in the Skills Standards and Certification Project

(Carmichael, Lessem, and Johnson, 1995) indicated that the profiling process was a logical, appropriate way to develop an occupational skills inventory and helpful in curriculum revision. This project recommended an ordinal arrangement for distinguishing the skill levels (Carmichael et al., 1995). Work Keys' job profiling has assisted the Ohio Department of Education in identifying applied academic skills required for success in 34 occupational areas (Vocational Instructional Materials Laboratory, 1994).

Research by the ACT into the psychometric characteristics of the Listening and Writing tests which use the same tape-recorded messages as stimuli for written responses, indicated that this linkage introduces conceptual and statistical complications, including the possibility of correlated errors (Brennan, Gao, & Colton, 1995). A Weber State University project observed that listening on the job required interaction and two-way communications, not a one way receipt of highly artifical messages as presented by Work Keys. This project recommended dropping the Listening assessment and giving the facts in written format so that the assessee would prepare a business communication, thereby improving the assessment of Writing (Deis, 1995).

The Weber State University project recommended Teamwork profiling video revisions to help prevent the tendency to inflate the profile levels, eliminating reading computer screens as a component of Locating Information, upgrading the Teamwork assessment video tape, providing a reasonably priced on-line and/or fax scoring process, the ACT conducting additional criterion validation studies, and the ACT regularly convening

a user conference to identify problems and gather ideas for improvement. This project found evidence of criterion validity for Reading for Information, Applied Technology, Teamwork, and Writing assessments and stated that overall the Work Keys System is well developed and can be an effective tool in facilitating the transitions from school to work (Deis, 1995).

Summary Evaluation

There are both strengths and weaknesses associated with the Work Keys System. The ACT adheres to high standards and provides extensive user friendly client services; but budget restraints might hinder organizations in fully implementing the Work Keys System. It appears that the interpretation of profile levels is complicated by the variety of descriptors and lack of common discrete intervals for each skill area. The numerical scores, indicating level 3 (relatively simple) to level 7 (complex legal, technical, or regulatory), might indicate to the casual reader that the skill level score refers to an academic grade level or to other reported levels such as those used by the National Adult Literacy Survey (National Center for Education Statistics, 1993). Although the use of Work Keys for initial screening of job applicants and for program evaluations appear to be appropriate uses, the success or failure of the applicant or student seems to be directly related to their reading ability and general cognitive ability level. The excessive dependence on independently reading the assessment prompts may have a negative impact on some of the examinees.

Work Keys provides individuals with career planning information regarding their existing skill levels and the skill levels needed to perform the jobs that they want. Employers can use the job skill information to help select or further train their employees; educators can use the job skill information to develop appropriate workplace curricula and instruction. The Work Keys components can be used repeatedly to monitor attainment of the generic workplace competencies, as specified, and to document improvement in education and training programs.

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